WHAT IS CLAIMED IS

1. In a wireless network including a plurality of nodes, a method of performing neighbor discovery, the method comprising:

generating a signal at a first node for alerting other nodes in the network of the presence of the first node, the signal comprising a spread signal;

broadcasting the signal from the first node;

receiving the signal at a second node;

calculating an energy associated with the received signal;

establishing a threshold;

determining whether the energy is greater than the threshold; and

identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold.

2. The method of claim 1, further comprising:

filtering the received signal at the second node, wherein the calculating comprises calculating the energy of the filtered signal; and

transmitting a message from the second node to the first node, the message comprising information identifying the second node.

3. The method of claim 2, further comprising:

identifying a spreading code to be used for transmissions from the second node to the first node, and

wherein the transmitting comprises:

transmitting the message using the identified spreading code.

4. The method of claim 2, wherein the transmitting includes:

identifying a directional antenna to be used for transmitting the message, and

transmitting the message using the identified directional antenna.

5. The method of claim 2, further comprising:

de-spreading the signal by the second node using a spreading code associated with the signal; and

determining the identity of the first node from the de-spread signal.

6. The method of claim 1, wherein the filtering includes:

filtering the signal with a filter matched to a spreading sequence or code used to spread the signal.

7. The method of claim 1, wherein the spread signal is spread using at least one of a frequency hopping sequence, a direct sequence and a number of short pulses in accordance with ultra-wideband radio technology.

8. The method of claim 1, wherein the broadcasting includes at least one of:

broadcasting the signal at regular intervals,

broadcasting the signal at random or pseudorandom intervals, and

broadcasting the signal using a combination of regular and random or pseudorandom intervals.

9. In a network comprising a plurality of nodes, a first node comprising:

a processor configured to generate a spreading sequence that identifies the first node;

a transmitter configured to broadcast the spreading sequence; and

a receiver configure to receive a message from a second node, the message identifying the second node and indicating that the second node is a neighbor node.

10. The first node of claim 9, wherein the transmitter is further configured to at least one of:

broadcast the spreading sequence at regular intervals, broadcast the spreading sequence at random or pseudorandom intervals and broadcast the spreading sequence at a combination of regular and random or pseudorandom intervals.

11. The first node of claim 9, wherein the processor is further configured to:

generate at least a second spreading sequence that identifies the first node, wherein the transmitter is configured to broadcast the second spreading sequence at predetermined, random or pseudorandom intervals.

12. The first node of claim 9, wherein the transmitter is configured to:

broadcast the spreading sequence using at least one of a frequency hopping sequence, a direct sequence and a number of relatively short pulses.

13. The first node of claim 9, further comprising:

at least one omni-directional antenna, the transmitter broadcasting the spreading sequence using the omni-directional antenna; and

at least one directional antenna, wherein the transmitter is further configured to transmit data packets to the second node using the directional antenna.

14. A computer-readable medium having stored thereon a plurality of sequences of instructions, said instructions including sequences of instructions which, when executed by a processor, cause said processor to:

retrieve a spreading sequence that identifies a first node in a wireless network;

broadcast the spreading sequence; and

receive a message from a second node in the wireless network, the message identifying the second node and indicating that the second node is a neighbor node.

15. The computer-readable medium of claim 14, including instructions for causing said processor to at least one of:

broadcast the spreading sequence at regular intervals, broadcast the

spreading sequence at random or pseudorandom intervals and broadcast the spreading sequence at a combination of regular and random or pseudorandom intervals.

16. The computer-readable medium of claim 14, including instructions for causing said processor to:

retrieve at least a second spreading sequence that identifies the first node; and

broadcast the second spreading sequence at predetermined or random or pseudorandom intervals.

17. The computer-readable medium of claim 14, wherein the spreading sequence comprises at least one of a frequency hopping sequence, a direct sequence and a number of relatively short pulses.

18. The computer-readable medium of claim 14, including instructions for causing said processor to:

broadcast the spreading sequence using an omni-directional antenna; and

transmit data packets to the second node using a directional antenna.

19. In a network comprising a plurality of nodes, a first one of the nodes comprising:

at least one antenna configured to receive a signal from a second one of the nodes over a period of time;

a filtering device configured to filter the received signal; and

a processing device coupled to the filtering device, the processing device configured to:

receive the filtered signal,

calculate an energy associated with the filtered signal, and

determine whether the energy exceeds a threshold.

20. The first node of claim 19, wherein the processing device is further configured to:

identify the second node as a neighbor node when the energy exceeds the threshold.

21. The first node of claim 20, further comprising:

a transmitter configured to transmit a message to the second node, the message comprising information identifying the first node.

22. The first node of claim 21, further comprising:

a memory configured to store information that identifies spreading codes to be used for transmissions to the respective plurality of nodes in the network; and

wherein the processing device is further configured to:

identify a spreading code to be used for transmissions to the second node using the information stored in the memory, and

transmit the message using the identified spreading code.

23. The first node of claim 22, wherein the memory stores a unique spreading code for each of the respective plurality of nodes in the network.

24. The first node of claim 21, wherein the at least one antenna comprises a set of directional antennas, wherein the processing device is further configured to:

identify a directional antenna to be used for transmitting the message, and

forward the message using the identified directional antenna.

25. The first node of claim 20, wherein the processing device is further configured to:

de-spread the signal using a spreading code associated with the signal, and

determine the identity of the second node based on the de-spread signal.

26. The first node of claim 21, wherein the processing device is further configured to:

determine a spreading code associated with the second node, and

generate data messages for transmission to the second node using the determined spreading code.

27. A computer-readable medium having stored thereon a plurality of sequences of instructions, said instructions including sequences of instructions which, when executed by a processor, cause said processor to:

filter a signal received over a period of time from a first node in a wireless network;

calculate an energy associated with the filtered signal;

determine whether the energy exceeds a threshold; and

identify the first node as a neighbor node when the energy exceeds the threshold.

28. The computer-readable medium of claim 27, including instructions for causing the processor to:

transmit a message to the first node, the message comprising information identifying the receiving node and indicating that the receiving node is a neighbor node.

29. The computer-readable medium of claim 28, including instructions for causing the processor to:

identify a spreading code to be used for transmissions to the first node; and

wherein when transmitting a message, the processor:

transmits the message using the identified spreading code.

30. The computer-readable medium of claim 29, wherein the identified spreading code is unique for transmissions to the first node.

31. The computer-readable medium of claim 28, including instructions for causing the processor to:

identify a directional antenna to be used for transmitting the message.

32. The computer-readable medium of claim 27, including instructions for causing the processor to:

de-spread the signal using a spreading code associated with the signal; and

determine the identity of the first node based on the de-spread signal.

33. The computer-readable medium of claim 27, including instructions for causing the processor to:

determine a spreading code associated with the first node; and

transmit messages to the first node using the determined spreading code.

34. A system for performing neighbor discovery in a wireless network, comprising:

means for generating a signal at a first node for alerting other nodes in the network of the presence of the first node, the signal comprising a spread signal;

means for broadcasting the signal from the first node;

means for receiving the signal at a second node;

means for filtering the received signal at the second node;

means for calculating an energy associated with the filtered signal;

means for determining whether the energy is greater than a threshold; and

means for identifying, by the second node, the first node as a neighbor node when the energy is greater than the threshold.

35. In a network including a plurality of nodes, a method of performing neighbor discovery, the method comprising:

broadcasting a spreading sequence from at least a first node in the network;

detecting, by at least a second node in the network, the spreading sequence;

identifying, by the second node, the first node as a neighbor;

selecting, by the second node, a directional antenna; and

transmitting a message from the second node to the first node using the directional antenna, the message comprising information identifying the second node.

36. The method of claim 35, further comprising:

determining a spreading code to be used for transmissions from the second node to the first node; and

wherein the transmitting a message comprises:

transmitting the message using the determined spreading code.

37. The method of claim 35, further comprising:

broadcasting the spreading sequence a number of times; and

adjusting the power level associated with the broadcasting based on whether a reply message, indicating that at least the second node has detected the spreading sequence, has been received by the first node.

38. The method of claim 37, further comprising:

changing the spreading sequence after a number of broadcasts.

39. A first node in a wireless network comprising:

an omni-directional antenna;

a transmitter configured to transmit a signal for alerting other nodes in the network of the presence of the first node via the omni-directional antenna, the signal comprising a spread signal that is spread using at least one of a direct sequence, a frequency hopping sequence and a number of short pulses; and

a receiver configured to receive a message from a second node in the network, the message identifying the second node as a neighbor node and being sent in response to the second node detecting the signal from the first node.

40. The first node, further comprising:

a directional antenna; and

wherein the transmitter is further configured to:

transmit data packets to the second node using the directional antenna after a neighbor relationship has been established with the second node.

41. A first node in a wireless network comprising:

a plurality of directional antennas;

a receiver configured to receive a signal from a second node in the wireless network over a period of time;

a processing device configured to:

identify the second node as a neighbor node based on an energy associated with the received signal,

identify a first directional antenna from the plurality of directional antennas that received the signal with a highest signal-to-noise ratio, and

generate a message for transmission to the second node, the message comprising information identifying the first node; and

a transmitter configured to transmit the message to the second node using the first directional antenna.